



UNITED STATES PATENT AND TRADEMARK OFFICE

CH
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/557,997	04/24/2000	Ganesh Venkataraman	M0656/7055 (HCL)	7686

23628 7590 03/02/2006

WOLF GREENFIELD & SACKS, PC
FEDERAL RESERVE PLAZA
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

EXAMINER

SMITH, CAROLYN L

ART UNIT	PAPER NUMBER
----------	--------------

1631

DATE MAILED: 03/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/557,997

Applicant(s)

VENKATARAMAN ET AL.

Examiner

Carolyn L. Smith

Art Unit

1631

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 36,37 and 54-72 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 36,37 and 54-72 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1631

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission, filed 12/12/05, has been entered.

Amended claim 36, filed 12/12/05, is acknowledged.

Claims herein under examination are 36-37 and 54-72.

Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 70 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 70 recites the limitation "heparin-like glycosaminoglycan" which is vague and indefinite. It is unclear what is meant by the "like" portion of this phrase. It is unclear if the "heparin-like" is referring to a similar activity, a similar structure, a similar secondary structure, similar glycosylation patterns, or some other similarity with respect to a heparin glycoaminoglycan. In addition, it is unclear how similar the intended feature has to be to a

Art Unit: 1631

heparin glycosaminoglycan to satisfy the “like” limitation. Clarification of this issue via clearer claim wording is requested.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 36-37, 54-64, and 66-72 are rejected under 35 U.S.C. 102(b) as being anticipated by van Kuik et al. (Carbohydrate Research, Volume 235, 1992, pages 53-68).

Van Kuik et al. disclose a method for determining matches between the carbohydrate structures of a query sequence and a polysaccharide via a database computer program (abstract) including monosaccharides and lactose-type chain (i.e. of disaccharide with Gal-Glc sequence) (page 54, third and last paragraph), as stated in instant claims 36, 59, and 60. Van Kuik et al. disclose the database program runs on IBM compatible personal computers using MS-DOS (page 54, third paragraph). Table I shows a database record in ASCII format comprising a sequence listing with an identifier (H#) and various fields of value information including PPM values. Table II (A) shows a query sequence listing with a first data structure in the input screen of the program including an identifier (i.e. N on line 3) in a field with PPM values for the monosaccharides of the query sequence which represents a first data structure tangibly embodied in a computer readable medium. Table II (B) shows the program's output screen of a polysaccharide, which is not a nucleic acid, represented by a second data structure tangibly

Art Unit: 1631

embodied on a computer readable medium including an identifier (S#: N-0A02-003860) that includes fields storing values (i.e. PPM values) for the monosaccharide residues, as stated in instant claim 36. Van Kuik et al. disclose searching the database for structure matches with a user-defined profile of structures (page 57, first paragraph) as well as the “Start Search” button on the Input screen (Table II (A)) which represents a user providing input for one or more fields of the first data structure with an input device, as stated in step (A) of instant claim 36. Van Kuik et al. disclose adding residue constraints to the search profile as well as searching and counting only relevant residues inside a tolerance limit (page 55, last line and page 57, lines 1-5) which represents generating at least one mask with the values stored in one or more fields of the first data structure, as stated in step (B) of instant claim 36. Van Kuik et al. disclose using “AND”, “OR”, or “NOT” operations with the hit lists wherein the hit list search took place within the tolerance limit, combining searches (page 57, first paragraph), as well as using “N”s on hit structures (Table IV) and output results (Table II(B) and Table IV) which represent performing at least one binary operation, such as “AND”, on the values stored in the one or more fields of the second data structure using at least one mask to generate at least one result (as stated in instant claims 36 and 71) as well as combining results with an “OR” operation to generate at least one result (as stated in instant claim 72). Van Kuik et al. disclose results with matching structural elements highlighted (abstract, Tables II (B) and IV) which represents determining whether the monosaccharides or dissacharides of the query sequence match the monosaccharides or dissacharides of the polysaccharide with at least one result, as stated in step (D) of instant claim 36. Van Kuik et al. disclose the program and database require 3.5 Mbytes of disc space and Table II shows fields of data structures wherein each field represents a bit (unit of

Art Unit: 1631

information storage) field, as stated in instant claim 37. Table II shows numerical PPM values which represent non-character based fields, as stated in instant claim 54. Van Kuik et al. disclose a query sequence as "Structure I" (page 62) and a polysaccharide result example as "N-0A02-003860" (Table II (B)) which represent numerical identifiers, as stated in instant claim 55. Van Kuik et al. disclose the monosaccharides of the query sequence (page 62) and polysaccharide sequence (Table IV) from numbers 1 to 8 which identify the constituents in the carbohydrate chains (Figure 2 caption, page 62) which represent single digit hexadecimal identifier numbers, as stated in instant claim 56. Table II lists PPM values with decimal values and Table IV lists fraction codes which represent decimal value identifiers which may be reduced to a plurality of prime divisors (i.e. one and three for N2.1 of page 64), as stated in instant claims 57 and 58. Van Kuik et al. disclose PPM values of the monosaccharides in the polysaccharide sequence (Table II) which represent NMR properties of the monosaccharides in the polysaccharide sequence, as stated in instant claim 61. Tables II (B) shows the identity of the polysaccharide as well as its monosaccharides and their associated PPM values which represent the identity and exact chemical structure of the polysaccharide, as stated in instant claims 62, 63, and 68. Van Kuik et al. disclose fraction N2 contained compounds with two negative charges (page 59, first paragraph) which represent properties comprising the charge, as stated in instant claim 64. Van Kuik et al. disclose preparing oligosaccharides involving sulfosalicylic acid, 1% sodium dodecyl sulfate, and 73 U of peptide-N-(N-acetyl- β -D-glucosaminyl)-asparagine amidase F which represents properties comprising the nature and degree of sulfation and acetylation (page 57, second paragraph), as stated in instant claims 66 and 67. Van Kuik et al. disclose percent match results of the hit structures (polysaccharides) with the query sequence (Table IV,

Art Unit: 1631

column 6 from left) which represents the act of determining step with a result that has a non-zero value, as stated in instant claim 69. Van Kuik et al. disclose analyzing carbohydrate fractions prepared from a pool of horse serum glycoproteins (abstract and page 57, second paragraph) wherein a monosaccharide of the polysaccharide is a monosaccharide of a heparin-like glycosaminoglycan, as stated in instant claim 70.

Thus, Van Kuik et al. anticipate instant claims 36-37, 54-64, and 66-72.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 65 is rejected under 35 U.S.C. 103(a) as being unpatentable over van Kuik et al. (Carbohydrate Research, Volume 235, 1992, pages 53-68) as applied to claims 36-37, 54-64, and

Art Unit: 1631

66-72 above, and further in view of Van Kuik et al. (Trends in Biotechnology, Volume 10, 1992, pages 182-185).

Van Kuik et al. (A) (1992, Carbohydrate Research) do not describe properties comprising the molecular weight of the monosaccharide or disaccharide of the polysaccharide (instant claim 65).

Van Kuik et al. (B) (1992, Trends in Biotechnology) describe using databases of complex carbohydrates to search for carbohydrate structures (title and page 183, col. 1, third paragraph). Van Kuik et al. (B) describe searching monosaccharides and all residues attached to it (page 183, col. 1, fourth paragraph) which encompasses the search of monosaccharides, disaccharides, and other oligosaccharides. Van Kuik et al. (B) describe searches can be made for other items including molecular formula and molecular weight (page 183, col. 2, first paragraph) which represents properties comprising molecular weight, as stated in instant claim 65.

Van Kuik et al. (B) state review articles provide easy access to data but cover only selected parts of NMR data which is neither corrected or updated which is why it is a good idea to store NMR tables in a computer database and develop a program for easy manipulation of the data (page 184, col. 2, second paragraph). Van Kuik et al. (B) state as the number of published tables grows exponentially, a computerized approach of data storage and retrieval is essential (page 185, col. 1, fourth paragraph). It would have been obvious to the person of ordinary skill in the art at the time the invention was made to search other items, such as molecular weight, as stated by Van Kuik et al. (B) (page 183, col. 2, first paragraph) along with structure search of carbohydrates, as stated by Van Kuik et al. (A) (abstract) and (B) (page 183, col. 1, last paragraph) in order to narrow the search as stated by Van Kuik et al. (B) (page 183, col. 1, last

Art Unit: 1631

paragraph). The person of ordinary skill in the art would have been motivated to make this modification because the CCSD database is growing rapidly and if the hits are too large to browse through, then supplementary searches can be made to narrow the number of branches or monosaccharide residues or put other constraints by using different search profiles, as stated by Van Kuik et al. (B) (page 183, col. 1, last paragraph and col. 2, third paragraph). One would have expected success in combining these limitations as both references deal with the same database program involving ¹H NMR (Van Kuik et al. (A) abstract) and (B) (page 184, col. 2, second paragraph).

Thus, Van Kuik et al. (A) in view of Van Kuik et al. (B) make obvious the instant invention.

Applicants' arguments with respect to the 35 USC 103(a) rejection have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center. The faxing of such papers must conform to the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR §1.6(d)). The Central Fax Center number for official correspondence is (571) 273-8300.

Art Unit: 1631

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carolyn Smith, whose telephone number is (571) 272-0721. The examiner can normally be reached Monday through Thursday from 8 A.M. to 6:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ardin Marschel, can be reached on (571) 272-0718.

Any inquiry of a general nature or relating to the status of this application should be directed to Legal Instruments Examiner Tina Plunkett whose telephone number is (571) 272-0549.

February 15, 2006

A handwritten signature in black ink, appearing to read 'Carolyn Smith', with a stylized flourish at the end.

Carolyn Smith
Examiner
Art Unit 1631